

What is claimed:

Claim-1. (amended) An increased stiffness of a vehicle structure of a motor vehicle comprising

5 | a main vehicle body (20) having at least one door aperture (20.1, 20.1B, 20.1T, 20.1h, 20.1x) therein;

object | a mating vehicle door (8, 8B, 8T, 8h, 8x), generally representing a tailgate- (8T), sliding side-, cargo-, liftgate door, trunk cover (8x), hood (8h) or vehicle door (8, 8B), whose door frame, hingedly secured to that vehicle body (20) for pivotal movement between an open and a closed position, is reinforced by door-frame members, which are at least two impact beams (1, 7, 1B, 7B), spanning the door aperture, door-reinforcement members elements and at least one window-guide channel (6, 6B, 6.1, 6.2, 6.1B, 6.2B, 6.1a, 6.2a, 6.1aB, 6.2aB) to guide and receive a window pane, is hingedly secured to that vehicle body (20) for pivotal movement between an open and a closed position;

10 | vehicular couples, consisting of

15 | the vehicle door & a vehicle roof (17),

the vehicle door & a side rail (18),

the vehicle door & a pillar and

the vehicle door & a flange (21, 21T, 21h, 21x) of the vehicle body (20),

20 | at least one of which is equipped with interengaging assemblies, each of which includes a key, arranged to one vehicular member of the vehicular couple, facing the other vehicular member, and a mating receptacle located thereon; and

25 | interengaging assemblies, each of which includes a key arranged to one of the reinforcing members of that door frame, facing a vehicular member of that vehicle body, and a mating receptacle located thereon; and

adjusting mechanisms to reduce the clearances between the adjustable keys and the mating receptacles to permissible minimum-tolerances, when the vehicle door is closed, to ensure the an engagement of the interengaging assemblies and the connection of the vehicular couples consisting of

30 | vehicle door & vehicle roof (17),

vehicle door & side rail (18),

vehicle door & pillar and

vehicle door & flange (21, 21T, 21h, 21x) of the vehicle body (20);

35 | thus distributing impact energy to the respective all-vehicular members, lowering stress thereof and preventing passengers from ejection being hurled-out of the motor vehicle in a real-world the event of an accident.

Claim-2. (amended) An increased stiffness of of the vehicle structure according to claim 1, further comprising

40 | a main vehicle body (20) having at least three door apertures (20.1, 20.1B, 20.1T, 20.1h, 20.1x), two of which are series-connected, therein;

45 | three mating vehicle doors (8, 8B, 8T, 8h, 8x), each of which generally representing a tailgate- (8T), sliding side-, cargo-, liftgate door, trunk cover (8x), hood (8h) or vehicle door (8, 8B), whose door frame, reinforced by at least two impact beams (1, 7, 1B, 7B), spanning the door aperture, elements and at least one window-guide channel (6, 6B, 6.1, 6.2, 6.1B, 6.2B, 6.1a, 6.2a, 6.1aB, 6.2aB) to guide and receive a window pane, is

hingedly secured to that vehicle body (20) for pivotal movement between an open and a closed position;
interengaging assemblies, each of which includes a key arranged to one of the reinforcing members of that door frame, facing a vehicular member of that vehicle body, and a mating receptacle located thereon;
5 at least one extension member pillar-reinforcement member (17.3, 18.3, 23), mounted to a common pillar of the series-connected juxtaposed vehicle doors of a vehicle side, to receive at least two engaging members of the interengaging assemblies, which, when the juxtaposed doors are closed, engage with the keys-mating engaging members thereof to the receptacles, located on the respective door-frame members adjacent to that
10 common pillar located on the respective reinforcing members of those doors, when closed, for exploiting the constrained deformation thereof to prevent them from popping open in the event of an accident; and
whereby in the real-world accident those juxtaposed doors and the corresponding
15 vehicular members are in a state of constrained deformation which is exploited to prevent those juxtaposed doors from popping open adjusting mechanisms to reduce the clearances between the adjustable keys and the mating receptacles to minimum tolerances, when the vehicle doors are closed, to ensure the engagement of the interengaging assemblies and the connection of the vehicular couples consisting of
20 vehicle door & vehicle roof (17),
vehicle door & side rail (18),
vehicle door & pillar,
series-connected vehicle doors & common pillar and
vehicle door & flange (21, 21T, 21h, 21x) of the vehicle body (20)
25 thus distributing impact energy to all vehicular members, lowering stress thereof and preventing passengers from being hurled out of the motor vehicle in the event of an accident.

Claim-3. (amended) An The increased stiffness of vehicle of the vehicle structure according to claim 1, comprising wherein
30 a main vehicle body (20) having at least one door aperture (20.1, 20.1B, 20.1T, 20.1h, 20.1x) therein;
a mating vehicle door (8, 8B, 8T, 8h, 8x), generally representing a tailgate (8T), sliding side, cargo, liftgate door, trunk cover (8x), hood (8h) or vehicle door (8, 8B), whose
35 door frame, reinforced by at least two impact beams (1, 7, 1B, 7B), spanning the door aperture, elements and at least one window guide channel (6, 6B, 6.1, 6.2, 6.1B, 6.2B, 6.1a, 6.2a, 6.1aB, 6.2aB) to guide and receive a window pane, is hingedly secured to that vehicle body (20) for pivotal movement between an open and a closed position;
interengaging assemblies, each of which includes a key arranged to one of the reinforcing
40 members of that door frame, facing a vehicular member of that vehicle body, and a mating receptacle located thereon; and
adjusting mechanisms to reduce the clearances between the adjustable keys and the mating receptacles to permissible tolerances, when the vehicle door is closed, to ensure the engagement of the interengaging assemblies and the connection of the vehicular couples;
45 at least one thereof has a plurality of interengaging assemblies operating operate at least at two planes, consisting of
vehicle door & vehicle roof (17),
vehicle door & side rail (18),

~~vehicle door & pillar and
vehicle door & flange (21, 21T, 21h, 21x) of the vehicle body (20)~~

~~thus distributing impact energy to all vehicular members, lowering stress thereof and
preventing passengers from being hurled out of the motor vehicle in the event of an
accident, thus enormously cutting assembly time associated with allowing small tolerances
larger than the permissible tolerances.~~

~~Claim 4. (amended) An~~The increased stiffness of vehicle of the vehicle structure according
to claim 2, comprising wherein the interengaging assemblies of the vehicular couple operate
in at least at two planes.

~~a main vehicle body (20) having at least one door aperture (20.1, 20.1B, 20.1T, 20.1h,
20.1x) therein;~~

~~a mating vehicle door (8, 8B, 8T, 8h, 8x), generally representing a tailgate (8T), sliding
side, cargo, liftgate door, trunk cover (8x), hood (8h) or vehicle door (8, 8B), whose
door frame, reinforced by at least two impact beams (1, 7, 1B, 7B), spanning the door
aperture, elements and at least one window guide channel (6, 6B, 6.1, 6.2, 6.1B, 6.2B,
6.1a, 6.2a, 6.1aB, 6.2aB) to guide and receive a window pane, is hingedly secured to
that vehicle body (20) for pivotal movement between an open and a closed position;
interengaging assemblies, each of which includes a key arranged to one of the reinforcing
members of that door frame, facing a vehicular member of that vehicle body, and a
mating receptacle located thereon; and~~

~~adjusting mechanisms to reduce the clearances between the adjustable keys and the mating
receptacles to permissible tolerances, when the vehicle door is closed, to ensure the~~

~~Claim 65. (amended) An~~The increased stiffness of vehicle of the vehicle structure
according to claim 1, wherein the interengaging assembly of vehicle door & vehicle roof
(17) is provided with at least one transverse girder (17.2a, 17.2d, 17.2e, 17.2f, 17.2g),
connecting the pillar of one vehicle side to the pillar of the other vehicle side consists of
at least two hooks (15.6) mounted to the window guide channels (6.1a, 6.2a, 6.3, 6.4 or
6.1aB, 6.2aB, 6.3B, 6.4B); and
a mating rod (17.1d) arranged along that vehicle roof and mounted to two transverse
girders (17.2e, 17.2f, 17.2g) connecting the pillars of both vehicle sides to each other.

~~Claim 6. (amended) An~~The increased stiffness of vehicle of the vehicle structure according
to claim 15, wherein the interengaging assembly of vehicle door & vehicle roof (17) consists
of

at least two hooks (15.6), serving as the receptacles, are mounted to the window-guide
channels (6.1a, 6.2a, 6.3, 6.4 or 6.1aB, 6.2aB, 6.3B, 6.4B) of the vehicle door; and
a mating rod (17.1d), serving as the key, is arranged along that vehicle roof and mounted
to two the transverse girders (17.2e, 17.2f, 17.2g) connecting the pillars of both vehicle
sides to each other.

~~Claim 7. (amended) An~~The increased stiffness of vehicle of the vehicle structure according
to claim 16, wherein the interengaging assembly of vehicle door & side rail (18) consists of
at least two hooks (15.6), serving as the receptacles, are mounted to the window-guide
channels (6.1a, 6.2a, 6.3, 6.4 or 6.1aB, 6.2aB, 6.3B, 6.4B) of the vehicle door; and

another mating rod (17.1d), serving as the key, is arranged along the side rail and mounted to ~~two~~ at least one transverse girders (17.2e, 17.2f, 17.2g), connecting the pillars of both vehicle sides to each other.

5 ~~Claim 8. (amended) A~~ The increased stiffness of vehicle of the vehicle structure according to claim 1, wherein the interengaging assemblies of series-connected vehicle doors & vehicle roof (17) and series-connected vehicle doors & side rail (18) consist of
at least eight hooks (15.6), serving as the receptacles, are mounted to the corresponding window-guide channels (6.1a, 6.2a, 6.3, 6.4 or 6.1aB, 6.2aB, 6.3B, 6.4B) of the vehicle
10 door; and
~~two a~~ mating rods (17.1d), serving as the key, is arranged along ~~the~~ vehicle roof and side rail and mounted to ~~three~~ at least one transverse girders (17.2e, 17.2f, 17.2g), connecting ~~all the~~ pillars of both vehicle sides to each other.

15 ~~Claim 9. (amended) A~~ The increased stiffness of vehicle of the vehicle structure according to claim 15, wherein the adjustable interengaging assembly of vehicle door & pillar, whereto the door hinges are fastened, consists of
a the key (15.1) is bolted to the an intersection region of the pillar and vehicle roof, which is reinforced by a plate (17.1c) and transverse girder (17.2d), ~~connecting the pillars of~~
20 ~~both vehicle sides to each other; and~~
a the mating hole is arranged to the window-guide channel (6.1a, 6.2a, 6.1aB, 6.2aB) of the vehicle door.

25 ~~Claim 10. (amended) A~~ The increased stiffness of vehicle of the vehicle structure according to claim 15, wherein the adjustable interengaging assemblies of vehicle door & vehicle roof consist of
a the key (15.2a, 15.2); are bolted to an element (6.11) rigidly attached to the respective window-guide channel (6.1a, 6.2a, 6.3, 6.4, 6.1aB, 6.2aB, 6.3B, 6.4B) of the vehicle door; and a plurality of keys (15.2), bolted to the respective window-guide channels; and
30 the mating holes are arranged to the vehicle roof (17), reinforced by a plate (17.1, 17.1a) and the transverse plate girder (17.2a) connecting the pillars of both vehicle sides to each other.

35 ~~Claim 11. (amended) A~~ The increased stiffness of vehicle of the vehicle structure according to claim 15, wherein the interengaging assemblies of vehicle door & side rail consist of
a plurality of the keys (15.2, 15.4, 15.4a) are mounted to the respective window-guide channels (6.1a, 6.2a, 6.3, 6.4, 6.1aB, 6.2aB, 6.3B, 6.4B) of the vehicle door; and
40 the mating holes arranged to the vehicle roof (17), reinforced by a plate (17.1a) and the transverse girders, and to the side rail (18), reinforced by a side-rail reinforcement member (18.1, 18.1a) and transverse girders (18.2), connecting the pillars of both vehicle sides to each other.
45 the side rail (18) reinforced by an element (18.1, 18.1a).

Claim-12. (amended) ~~An~~ The increased stiffness of vehicle of the vehicle structure according to claim 1, wherein ~~the interengaging assemblies of vehicle door & vehicle roof and vehicle door & side rail consist of~~
5 ~~a plurality of the keys (15.2, 15.4, 15.4a) are mounted to the respective window-guide channels (6.1a, 6.2a, 6.3, 6.4, 6.1aB, 6.2aB, 6.3B, 6.4B) of the vehicle door; and~~
~~the mating holes are arranged to the side rail (18), reinforced by a side-rail reinforcement member (18.1, 18.1a) and transverse girders (18.2), connecting the pillars of both vehicle sides to each other.~~
10 ~~the vehicle roof (17), reinforced by the plate (17.1a), and to the side rail (18), reinforced by an element (18.1, 18.1a).~~

Claim-13. (amended) ~~An~~ The increased stiffness of vehicle of the vehicle structure according to claim 1, wherein ~~the adjustable interengaging assemblies of vehicle doors & flange (21) of the vehicle body (20) consist of~~
15 ~~a plurality of the keys (30, 32, 35) are bolted to the reinforced flange (21) of the vehicle body (20); and~~
~~the mating holes are arranged to the housings (6.5, 6.5B), rigidly attached to the window-guide channels (6, 6B), retaining the door-reinforcement members (6.6b, 6.7b, 6.8) and the impact beams (7, 7B), respectively.~~
20

Claim-14. (amended) ~~An~~ The increased stiffness of vehicle of the vehicle structure according to claim 1, wherein the key (15.6), adjustable from outside the motor vehicle, comprises a bolt (15.21), a number of spacers (15.22), a washer (15.24), a nut (15.25) and
25 a hook (15.6) with interior diameter (d_i) and gap (s_i).

Claim-15. (amended) ~~An~~ The increased stiffness of vehicle of the vehicle structure according to claim 14, wherein the key, adjustable from outside the motor vehicle, comprises a bolt (15.14), a large washer (15.13) with outer diameter (D), a number of
30 spacers (15.12) and a sleeve (15.11), both have a total length (l) and an outer diameter (d_R) when assembled, where the length of the key is adjusted by removing or adding the spacers or replacing the sleeve with one having an appropriate length, and the outer diameter thereof is adjusted by replacing the large washer with one having an appropriate outer diameter and the spacer and sleeve are replaced by ones having an appropriate outer diameter.
35

Claim-16. (amended) ~~An~~ The increased stiffness of vehicle of the vehicle structure according to claim 15, wherein the sleeve (15.11) of the key with exterior diameter (d) is governed by the equation ($D \geq d \geq d_R$), ~~where (D) is the exterior diameter of washer (15.13) and (d_R) is the diameter of spacer (15.12) and sleeve.~~
40

Claim-17. (amended) ~~An~~ The increased stiffness of vehicle of the vehicle structure according to claim 15, wherein the front region of washer (15.13) has radial teeth.

Claim-18. (amended) ~~An~~ The increased stiffness of vehicle of the vehicle structure according to claim ~~15~~ 17, wherein the washer is an integral part of the bolt.
45

5 ~~Claim-19. (amended) A~~The increased stiffness of vehicle of the vehicle structure
according to claim 1, wherein both ends of the U-shaped window-guide channel (6, 6B),
facing the lower ~~vehicular member portion~~ of the vehicle body (20), and an upper portion of
that window-guide channel, facing the upper ~~portion vehicular member~~ of the vehicle body
(20), accommodate the engaging members of the interengaging assemblies.

10 ~~Claim-20. (amended) A~~The increased stiffness of vehicle of the vehicle structure
according to claim 19, wherein both ends of the ~~respective stiff~~ U-shaped window-guide
channel (6, 6B) are connected to each other by a window-guide member (6.4, 6.4B).

~~Claim-21. (amended) A~~The increased stiffness of vehicle of the vehicle structure
according to claim 1, wherein the window-guide channels (6.1, 6.2, 6.1B, 6.2B) are rigidly
attached to the respective stiff window-guide members (6.1a, 6.2a, 6.1aB, 6.2aB).

15 ~~Claim-22. (amended) A~~The increased stiffness of vehicle of the vehicle structure
according to claim 14, wherein ~~the adjustable interengaging assemblies of vehicle door &~~
~~pillar, whereto the vehicle door hinges are fastened, consist of~~
the holes are arranged to the common pillar of the juxtaposed vehicle doors, reinforced by
the pillar-reinforcement member (23); and
20 the mating a plurality of keys (313, 34, 36) are bolted to a retaining-respective door-
reinforcement members (6.6a, 6.8), each of which is rigidly attached to the window-
guide channel (6, 6B); and impact beams (1, 1B, 7, 7B); and
~~mating holes arranged to the pillar reinforced by an extension member (23).~~

25 ~~Claim-23. (amended) A~~The increased stiffness of vehicle of the vehicle structure
according to claim 2, wherein ~~the adjustable interengaging assemblies of series-connected~~
~~vehicle doors & common pillar are defined by~~
the at least one pair of keys (15.3, 15.3a) are bolted to a pair of both legs of the upper U-
shaped extension memberpillar-reinforcement member (17.3), mounted to of the
30 common pillar, reinforced by a plate (17.1b), arranged along the vehicle roof (17) and
attached rigidly thereto and to a transverse girder (17.2c), connecting the common
pillars of both vehicle sides to each other; and
the mating holes are arranged to the respective both window-guide channels of the
35 juxtaposed series-connected-vehicle doors-adjacent to that common pillar.

~~Claim-24. (amended) A~~The increased stiffness of vehicle of the vehicle structure
according to claim 2, wherein ~~the adjustable interengaging assemblies of series-connected~~
~~vehicle doors & common pillar are defined by~~
at least one pair of the keys (15.5, 15.5a) are bolted to a pair of both legs of the lower U-
40 shaped extension memberpillar-reinforcement member (18.3) of mounted to the
common pillar, reinforced by a side-rail reinforcement memberan element (18.1b),
arranged along the side rail (18) and attached rigidly thereto and to a transverse girder
(18.2), connecting the common pillars of both vehicle sides to each other; and
the mating holes are arranged to the respective both window-guide channels of the
45 juxtaposed series-connected-vehicle doors-adjacent to that common pillar.

~~Claim 25. (amended) An~~ The increased stiffness of vehicle of the vehicle structure according to claim 24, wherein a belt ease-casing (26) is accommodated in the lower U-shaped extension memberpillar-reinforcement member (18.3).

5 ~~Claim 26. (amended) An~~ The increased stiffness of vehicle of the vehicle structure according to claim 3, wherein the adjustable interengaging assemblies of the vehicle door (8) & the pillar, operating in at least two planes, are defined by in which
a plurality of the keys (33, 34) are bolted to the window-guide channel (6) and a plurality
of keys (34), bolted to a retaining the door-reinforcement members (6.7a), rigidly
10 attached to the window-guide channel (6) and impact beams (1, 7), respectively; and
the mating receptacles are arranged to the reinforced pillar.

~~Claim 27. (amended) An~~ The increased stiffness of vehicle of the vehicle structure according to claim 3, wherein the adjustable interengaging assemblies of the vehicle door (8, 8B) & the pillar, whereto the door frame is hingedly secured, operating-operate in at least
15 three planes, in whichare defined by
a plurality of the keys (15.1, 30, 31, 35, 36) are rigidly arranged to the reinforced pillar,
whereto the door frame is hingedly secured, and a plurality of keys (30, 31, 35, 36),
rigidly arranged to the reinforced flange (21) of the vehicle body (20); and
20 the mating receptacles are arranged to the retaining door-reinforcement members (6.6a, 6.8), a housings (6.5, 6.5B) and the window-guide channel (6.1a, 6.2a), respectively.

~~Claim 28. (amended) An~~ The increased stiffness of vehicle of the vehicle structure according to claim 43, wherein the interengaging assemblies of the vehicle door (8, 8B) &
25 the vehicle roof (17), operating-operate in at least four planes, are defined by in which
the a plurality of keys (15.2, 15.2a, 30, 32, 35, 37) are rigidly arranged to the respective
window-guide channels (6.1a, 6.2a, 6.3, 6.4, 6.1aB, 6.2aB, 6.3B, 6.4B) and at least
two keys (30, 32, 35, 37), rigidly arranged to the reinforced flange (21) of the vehicle
body (20), respectively; and
30 the mating receptacles are arranged to the reinforced vehicle roof (17) and that window-guide channels, respectively.

~~Claim 29 (cancelled)~~

35 ~~An increased stiffness of vehicle structure according to claim 4, wherein the interengaging assemblies of connecting vehicular couples, operating in many planes, are defined by~~
a plurality of keys (15.1 to 15.7, 30, 32, 35, 37) rigidly arranged to the reinforced pillar,
reinforced vehicle roof, reinforced side rail and reinforced flange of vehicle body,
respectively; and
40 the mating receptacles arranged to the reinforcing members of vehicle doors, respectively.

~~Claim 3029. (amended) An~~ The increased stiffness of vehicle of the vehicle structure according to claim 51, wherein a rear-door member (6.5C), whose contour is adapted to the
45 a door-contour of a rear portion of an outer panel of the rear vehicle door, is rigidly
attached to the window-guide channel (6B) and the impact beams (1B, 7B).

~~Claim 3130. (amended) An~~ The increased stiffness of vehicle of the vehicle structure according to claim 3029, wherein the adjustable interengaging assemblies consist of

the a plurality of keys (37) are bolted to the rear flange (21) of the vehicle body (20), reinforced by a flange-reinforcement member an element (21.4B, 21.6B, 21.5B); and the mating holes arranged to the rear-door door-contour-shaped-member (6.5C).

Claim-5. -(cancelled).

31. (substitute for the above-listed Claim 5). An increased stiffness of a vehicle structure of a motor vehicle comprising

a main vehicle body (20) having at least one door aperture (20.1, 20.1B, 20.1T, 20.1h, 20.1x) therein;

a mating vehicle door (8, 8B, 8T, 8h, 8x), generally representing a tailgate- (8T), sliding side-, cargo-, liftgate door, trunk cover (8x), hood (8h) or vehicle door (8, 8B), whose door frame, hingedly secured to that vehicle body (20) for pivotal movement between an open and a closed position, is reinforced by door-frame members, which are at least two impact beams (1, 7, 1B, 7B), spanning the door aperture, elements and at least one window-guide channel (6, 6B, 6.1, 6.2, 6.1B, 6.2B, 6.1a, 6.2a, 6.1aB, 6.2aB) to guide and receive a window pane; and

vehicular couples, consisting of

the vehicle door & vehicle roof (17),

the vehicle door & side rail (18),

the vehicle door & a pillar, and

the vehicle door & a flange (21, 21T, 21h, 21x) of the vehicle body (20),

at least one of which is equipped with interengaging assemblies, each of which includes a key, arranged to one vehicular member of the vehicular couple, facing the other vehicular member, and a mating receptacle located thereon; and

adjusting mechanisms, provided for the interengaging assemblies, which operate in at least two planes;

thus enormously saving assembly time resulting from work to adjust large clearances between the adjustable keys and the mating receptacles to small tolerances, when the vehicle door is closed, distributing impact energy to the respective vehicular members, lowering stress thereof and preventing passengers from ejection out of the motor vehicle in a real-world accident.

Claim-32. (amended) AnThe increased stiffness of vehicle-of the vehicle structure according to claim 31, wherein the adjustable interengaging assemblies of the vehicle door (8, 8B) & the side rail (18); operating-operate in at least three planes, in whichare-defined-by

the a plurality of keys (15.4a, 30, 32, 35, 37) are rigidly arranged to the side rail (18) and at least two keys (30, 32, 35, 37), rigidly arranged to the reinforced flange (21) of the vehicle body (20); and

the mating receptacles are arranged to housings (6.5, 6.5B), the window-guide channels (6.1a, 6.2a, 6.3, 6.4, 6.1aB, 6.2aB, 6.3B, 6.4B) and a rear-door door-contour-shaped-member (6.5C), whose contour is adapted to a contour of a rear portion of an outer panel of the rear vehicle door, respectively.

Claim-33. (amended) AnThe increased stiffness of vehicle-of the vehicle structure according to claim 531, wherein the interengaging assemblies of the juxtaposed series-

connected vehicle doors & a common pillar thereof operate, operating in many planes, in
which are defined by

5 a plurality of the keys (15.3, 15.3a, 15.5, 15.5a, 33, 34, 36) are rigidly arranged to the
reinforced common pillar and the extension member pillar-reinforcement members (17.3,
10 18.3, 23) thereof the common pillar and a plurality of keys (33, 34, 36), rigidly arranged
to the reinforcing members of series-connected vehicle doors, respectively; and
the mating receptacles are arranged to the door-frame members of the juxtaposed vehicle
doors reinforcing members of series-connected vehicle doors and the reinforced common
pillar, respectively.

15 Claim 34. -(cancelled).

Claim 3334. (amended) An increased stiffness of vehicle structure, characterised by use of
metal, compound material, glass fibre reinforced material or non-metal material for material
15 of a key, receptacle, window guide channel, transverse girder, rod, plate and extension
member. The increased stiffness of the vehicle structure according to claim 31, wherein the
interengaging assemblies of the vehicular couples operate in many planes, in which
the keys (15.1 to 15.7, 30, 32, 35, 37) are rigidly arranged to the reinforced pillar, the
reinforced vehicle roof, the reinforced side rail and the reinforced flange, respectively;
20 and
the mating receptacles are arranged to the door-frame members.